

February-24-14 10:00:26 AM

Page 1

Stop ***NR2***

| | | | | |
|------------------------------|---|------|--|--|
| 100 | | 0.00 | | |
| *100* | BAND SAW | | | |
| Bandsaw | Memo | 0.00 | | |
| Jeaspa Bandsaw | Cut blanks 13.850" long +0.063" -0.000" | | | |
| 110 | | 0.00 | | |
| *110* | HAAS CNC VERTICAL MACHINING #1 | | | |
| HAAS 1 | Memo | 0.00 | | |
| HAAS CNC vertical machine #1 | 1-Machine per folio FA108 | | | |
| 120 | | 0.00 | | |
| *120* | QC2- Inspect parts off machine FAI/FAIB | | | |
| QC | Memo | 0.00 | | |
| Quality Control | | | | |

DQA:

Date: 14/09/13



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed:

Date: 14/4/11

Work Order update only ☐

| | | | | | |
|---------------------------|---|---|------------------------------------|--|--------------------------------------|
| Work Order: <u>113640</u> | DISPOSITION Rework <input type="checkbox"/> Scrap <input checked="" type="checkbox"/> Use-as-is <input type="checkbox"/> Suspected Unapproved <input type="checkbox"/> | AGAINST DEPARTMENT/PROCESS | | | |
| Part No. <u>D2741</u> | | Skid-tube <input type="checkbox"/> | Crosstube <input type="checkbox"/> | Water Jet <input type="checkbox"/> | Engineering <input type="checkbox"/> |
| NCR No. <u>14-3730</u> | | Machining <input checked="" type="checkbox"/> | Small Fab <input type="checkbox"/> | Prod. Eng. Coord. <input type="checkbox"/> | Quality <input type="checkbox"/> |
| | | Thermoforming <input type="checkbox"/> | Finishing <input type="checkbox"/> | Rec/Store/Packaging <input type="checkbox"/> | Other <input type="checkbox"/> |
| | | Large Fab <input type="checkbox"/> | Composite <input type="checkbox"/> | Supplier <input type="checkbox"/> | |

| Root Cause | Date | Step | Qty | Description of work order update or non-conformance | Initial Chief Eng | Action Description | Sign & Date | Verification | QC Inspector |
|---------------|---------|------|-----|---|-------------------|--------------------|-------------|--------------|--------------|
| Design | | | | | | | | | |
| Doc/Data | | | | | | | | | |
| Equip/Tooling | 14/3/17 | 100 | 1 | Surface is pitted. | | SCRAP + Destroy | | | DAS 16 9-89 |
| Handling/Pre | | | | problem w/ raw mat'l. | 14/3/17 | No Replm. | 14-3-17 | PK 14/03/17 | 14/03/17 |
| Material | | | | RC material resun./ | | | | | |
| Operator | | | | un seen at inspecti | | | | | |
| Offset/Setup | | | | small indentation under | | | | | |
| Process | | | | 1st layer | | \$27.15 | | | |
| Supplier | | | | | | | | | |
| Training | | | | | | | | | |
| Transport | | | | | | | | | |
| Unapproved | | | | | | | | | |

FAULT CATEGORY

| | | | | |
|--|--|---|--|--|
| Landing Gear <input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric <input type="checkbox"/> Cracks <input type="checkbox"/> Crimp/Kink/Ripple/Wave <input type="checkbox"/> Cuffs <input type="checkbox"/> Crushing <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Marks/Chatter <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube | General <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damage/Defect <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drawing <input type="checkbox"/> Drill Holes <input type="checkbox"/> Finish <input type="checkbox"/> Fit/Function | <input type="checkbox"/> Folio/Program <input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete/Unqualified <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Misaligned/off center <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Off-set <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence | <input type="checkbox"/> Outside Dimensions <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge | <input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Set-up <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled <input type="checkbox"/> Other |
|--|--|---|--|--|

Work Order ID 113640

February-24-14 10:00:26 AM

113640

Page 2

Item ID: D2741 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Blade
Start Date: 2/24/14 Start Qty: 40.00 ***40*** Cust Item ID:
Required Date: 2/24/14 Req'd Qty: 40.00 ***40*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

| Sequence ID/ Work Center ID | Operation Description | Set Up/ Run Hours | Tool ID | Tool # | Plan Code | Accept Qty | Reject Qty | Reject Number | Insp. Stamp |
|---|---|----------------------|---------|--------|-------------------|---------------|---------------|------------------|----------------|
| 130 *130* QC Quality Control | QC8- Inspect parts - second check Memo | 0.00 0.00 | | | | 39 | 1 | | |
| 140 *140* Small Fab Small Fab | Small Fab Memo 1-Deburr 2-Bend per Dwg D2741 | 0.00 0.00 | | | DAS 30 9-89 | 39 | | | |
| 150 *150* QC Quality Control | QC5- Inspect part completeness to step on W/O Memo | 0.00 0.00 | | | DAS 27 9-89 | 39 | | | |

14/03/17

can

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

| | | | | | | | | | | | | | | | | | | |
|--|--|---|--------------------------------------|------------------------------------|------------------------------------|--------------------------------------|------------------------------------|------------------------------------|--|----------------------------------|--|------------------------------------|--|--------------------------------|------------------------------------|------------------------------------|-----------------------------------|--|
| Work Order: _____ Part No. _____ NCR No. _____ | DISPOSITION Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Suspected Unapproved <input type="checkbox"/> | AGAINST DEPARTMENT/PROCESS <table style="width: 100%;"> <tr> <td>Skid-tube <input type="checkbox"/></td> <td>Crosstube <input type="checkbox"/></td> <td>Water Jet <input type="checkbox"/></td> <td>Engineering <input type="checkbox"/></td> </tr> <tr> <td>Machining <input type="checkbox"/></td> <td>Small Fab <input type="checkbox"/></td> <td>Prod. Eng. Coord. <input type="checkbox"/></td> <td>Quality <input type="checkbox"/></td> </tr> <tr> <td>Thermoforming <input type="checkbox"/></td> <td>Finishing <input type="checkbox"/></td> <td>Rec/Store/Packaging <input type="checkbox"/></td> <td>Other <input type="checkbox"/></td> </tr> <tr> <td>Large Fab <input type="checkbox"/></td> <td>Composite <input type="checkbox"/></td> <td>Supplier <input type="checkbox"/></td> <td></td> </tr> </table> | Skid-tube <input type="checkbox"/> | Crosstube <input type="checkbox"/> | Water Jet <input type="checkbox"/> | Engineering <input type="checkbox"/> | Machining <input type="checkbox"/> | Small Fab <input type="checkbox"/> | Prod. Eng. Coord. <input type="checkbox"/> | Quality <input type="checkbox"/> | Thermoforming <input type="checkbox"/> | Finishing <input type="checkbox"/> | Rec/Store/Packaging <input type="checkbox"/> | Other <input type="checkbox"/> | Large Fab <input type="checkbox"/> | Composite <input type="checkbox"/> | Supplier <input type="checkbox"/> | |
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| Thermoforming <input type="checkbox"/> | Finishing <input type="checkbox"/> | Rec/Store/Packaging <input type="checkbox"/> | Other <input type="checkbox"/> | | | | | | | | | | | | | | | |
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| Root Cause | Date | Step | Qty | Description of work order update or non-conformance | Initial Chief Eng | Action Description | Sign & Date | Verification | QC Inspector |
|---------------|------|------|-----|---|-------------------|--------------------|-------------|--------------|--------------|
| Design | | | | | | | | | |
| Doc/Data | | | | | | | | | |
| Equip/Tooling | | | | | | | | | |
| Handling/Pre | | | | | | | | | |
| Material | | | | | | | | | |
| Operator | | | | | | | | | |
| Offset/Setup | | | | | | | | | |
| Process | | | | | | | | | |
| Supplier | | | | | | | | | |
| Training | | | | | | | | | |
| Transport | | | | | | | | | |
| Unapproved | | | | | | | | | |

FAULT CATEGORY

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|--|--|---|--|

Work Order ID 113640

February-24-14 10:00:26 AM

113640

Page 3

Item ID: D2741

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Blade

Start Date: 2/24/14

Start Qty: 40.00

40

Cust Item ID:

Required Date: 2/24/14

Req'd Qty: 40.00

40

Customer:

Reference:

Approvals:

Process Plan: _____

Date: _____

Tooling: _____

Date: _____

Run Start ***NR1***

QC: _____

Date: _____

SPC (Y/N): _____

Date: _____

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

160

Outsource process - Heat Treat

0.00

160

Outsource1

Memo

0.00

Issue P/O: 23432
Harden material as per Dwg D2741

Min. Ultimate Tensile Strength = 152 ksi (34-40 HRC)

Min. Yield Tensile Strength = 141 ksi

Test report or Certification required

Sand blast parts

CZ 14/03/20 39

170

Receive & Inspect for Damage & Mat'l Certs

0.00

170

Packaging

Memo

0.00

Ensure Test report or Certification attached

Packaging

14/4/3 (39)

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

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Work Order update only ☐

| | | | | | | | | | | | | | | | | | | |
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| Root Cause | Date | Step | Qty | Description of work order update or non-conformance | Initial Chief Eng | Action Description | Sign & Date | Verification | QC Inspector |
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| Design | | | | | | | | | |
| Doc/Data | | | | | | | | | |
| Equip/Tooling | | | | | | | | | |
| Handling/Pre | | | | | | | | | |
| Material | | | | | | | | | |
| Operator | | | | | | | | | |
| Offset/Setup | | | | | | | | | |
| Process | | | | | | | | | |
| Supplier | | | | | | | | | |
| Training | | | | | | | | | |
| Transport | | | | | | | | | |
| Unapproved | | | | | | | | | |

FAULT CATEGORY

| | | | |
|--|--|---|---|
| Landing Gear <input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric <input type="checkbox"/> Cracks <input type="checkbox"/> Crimp/Kink/Ripple/Wave <input type="checkbox"/> Cuffs <input type="checkbox"/> Crushing <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Marks/Chatter <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube | General <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damage/Defect <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drawing <input type="checkbox"/> Drill Holes <input type="checkbox"/> Finish <input type="checkbox"/> Fit/Function | <input type="checkbox"/> Folio/Program <input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete/Unqualified <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Misaligned/off center <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Off-set <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence | <input type="checkbox"/> Outside Dimensions <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge <input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Set-up <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled <input type="checkbox"/> Other _____ _____ _____ |
|--|--|---|---|

Work Order ID 113640

February-24-14 10:00:27 AM

113640

Page 4

Item ID: D2741 Accept *N900040100* Setup Start *NS1*
 Revision ID: Stop *NS2*
 Item Name: Blade
 Start Date: 2/24/14 Start Qty: 40.00 *40* Cust Item ID:
 Required Date: 2/24/14 Req'd Qty: 40.00 *40* Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start *NR1*
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop *NR2*

| Sequence ID/ Work Center ID | Operation Description | Set Up/ Run Hours | Tool ID | Tool # | Plan Code | Accept Qty | Reject Qty | Reject Number | Insp. Stamp |
|--|--|------------------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
| 180 *180* QC Quality Control | QC5- Inspect part completeness to step on W/O Memo | 0.00 27 9-89 14/4/3 | | | | 39 can | | | |
| 190 *190* HandFinish Hand Finishing | Memo clean with wash & wipe to remove oil | 0.00 0.00 | | | | 39 | | 14-4-4 | |
| 200 *200* Powdercoat Powder Coating | White Gloss(Ref:4.3.5.2) per QSI005 4.3-Steel M128007 Memo START TIME: 11:10 OVEN TEMPERATURE: 400 FINISH TIME: 11:40 | 0.00 0.00 | | | | 39 | | 14-4-8 | |

DAS 34 9-89

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

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Work Order update only ☐

| | | | | | | | | | | | | | | | | | | |
|--|--|--|--------------------------------------|------------------------------------|------------------------------------|--------------------------------------|------------------------------------|------------------------------------|--|----------------------------------|--|------------------------------------|--|--------------------------------|------------------------------------|------------------------------------|-----------------------------------|--|
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| Design | | | | | | | | | |
| Doc/Data | | | | | | | | | |
| Equip/Tooling | | | | | | | | | |
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FAULT CATEGORY

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|--|--|---|---|

Work Order ID 113640

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Page 5

Item ID: D2741 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Blade
Start Date: 2/24/14 Start Qty: 40.00 ***40*** Cust Item ID:
Required Date: 2/24/14 Req'd Qty: 40.00 ***40*** Customer:
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Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
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| Sequence ID/ Work Center ID | Operation Description | Set Up/ Run Hours | Tool ID | Tool # | Plan Code | Accept Qty | Reject Qty | Reject Number | Insp. Stamp |
|---|--|--------------------------------------|---------|--------|--------------|---------------|-------------------|------------------|--------------------|
| 210 *210* QC Quality Control | QC3- Inspect Part Finish Memo | 0.00 DAS 27 9-89 14/4/14 | | | | 39 Coun | | | |
| 220 *220* Packaging Packaging | Identify as per dwg & Stock Location: <u>51466</u> Memo | 0.00 0.00 | | | | 39x | DAS 28 9-89 | APR 09 2014 | |
| 230 *230* QC Quality Control | QC21- Final Inspection - Work Order Release Memo | 0.00 0.00 | | | | | | | 14/4/14 1104-09 |

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

| | | | | | | | | | | | | | | | | | | |
|--|--|---|--------------------------------------|------------------------------------|------------------------------------|--------------------------------------|------------------------------------|------------------------------------|--|----------------------------------|--|------------------------------------|--|--------------------------------|------------------------------------|------------------------------------|-----------------------------------|--|
| Work Order: _____ Part No. _____ NCR No. _____ | DISPOSITION Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Suspected Unapproved <input type="checkbox"/> | AGAINST DEPARTMENT/PROCESS <table style="width: 100%;"> <tr> <td>Skid-tube <input type="checkbox"/></td> <td>Crosstube <input type="checkbox"/></td> <td>Water Jet <input type="checkbox"/></td> <td>Engineering <input type="checkbox"/></td> </tr> <tr> <td>Machining <input type="checkbox"/></td> <td>Small Fab <input type="checkbox"/></td> <td>Prod. Eng. Coord. <input type="checkbox"/></td> <td>Quality <input type="checkbox"/></td> </tr> <tr> <td>Thermoforming <input type="checkbox"/></td> <td>Finishing <input type="checkbox"/></td> <td>Rec/Store/Packaging <input type="checkbox"/></td> <td>Other <input type="checkbox"/></td> </tr> <tr> <td>Large Fab <input type="checkbox"/></td> <td>Composite <input type="checkbox"/></td> <td>Supplier <input type="checkbox"/></td> <td></td> </tr> </table> | Skid-tube <input type="checkbox"/> | Crosstube <input type="checkbox"/> | Water Jet <input type="checkbox"/> | Engineering <input type="checkbox"/> | Machining <input type="checkbox"/> | Small Fab <input type="checkbox"/> | Prod. Eng. Coord. <input type="checkbox"/> | Quality <input type="checkbox"/> | Thermoforming <input type="checkbox"/> | Finishing <input type="checkbox"/> | Rec/Store/Packaging <input type="checkbox"/> | Other <input type="checkbox"/> | Large Fab <input type="checkbox"/> | Composite <input type="checkbox"/> | Supplier <input type="checkbox"/> | |
| Skid-tube <input type="checkbox"/> | Crosstube <input type="checkbox"/> | Water Jet <input type="checkbox"/> | Engineering <input type="checkbox"/> | | | | | | | | | | | | | | | |
| Machining <input type="checkbox"/> | Small Fab <input type="checkbox"/> | Prod. Eng. Coord. <input type="checkbox"/> | Quality <input type="checkbox"/> | | | | | | | | | | | | | | | |
| Thermoforming <input type="checkbox"/> | Finishing <input type="checkbox"/> | Rec/Store/Packaging <input type="checkbox"/> | Other <input type="checkbox"/> | | | | | | | | | | | | | | | |
| Large Fab <input type="checkbox"/> | Composite <input type="checkbox"/> | Supplier <input type="checkbox"/> | | | | | | | | | | | | | | | | |

| Root Cause | Date | Step | Qty | Description of work order update or non-conformance | Initial Chief Eng | Action Description | Sign & Date | Verification | QC Inspector |
|---------------|------|------|-----|---|-------------------|--------------------|-------------|--------------|--------------|
| Design | | | | | | | | | |
| Doc/Data | | | | | | | | | |
| Equip/Tooling | | | | | | | | | |
| Handling/Pre | | | | | | | | | |
| Material | | | | | | | | | |
| Operator | | | | | | | | | |
| Offset/Setup | | | | | | | | | |
| Process | | | | | | | | | |
| Supplier | | | | | | | | | |
| Training | | | | | | | | | |
| Transport | | | | | | | | | |
| Unapproved | | | | | | | | | |

FAULT CATEGORY

| | | | |
|--|--|---|---|
| Landing Gear <input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric <input type="checkbox"/> Cracks <input type="checkbox"/> Crimp/Kink/Ripple/Wave <input type="checkbox"/> Cuffs <input type="checkbox"/> Crushing <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Marks/Chatter <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube | General <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damage/Defect <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drawing <input type="checkbox"/> Drill Holes <input type="checkbox"/> Finish <input type="checkbox"/> Fit/Function | <input type="checkbox"/> Folio/Program <input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete/Unqualified <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Misaligned/off center <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Off-set <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence | <input type="checkbox"/> Outside Dimensions <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge <input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Set-up <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled <input type="checkbox"/> Other _____ _____ _____ |
|--|--|---|---|

Picklist Print

February-24-14 10:00:26 AM

Page 1

Work Order ID: 113640

113640

Parent Item: D2741

D2741

Parent Item Name: Blade

Start Date: 2/24/14

Required Date: 2/24/14

Start Qty: 40.00

Required Qty: 40.00

Comments: IPP Rev: D00.11.15Removed P/O turning - in house processEC
 IPP Rev: E 06-03-20 As Per Rev C JLM
 IPP Rev: F 06.04.20Added grinding after heat treating EC

| Component Item ID/ Item Name | Replacement Item ID | Mfg/ Purch | Bin Item | Primary Location | Last Location | Route Seq ID | Unit of Measure | Qty on Hand | Qty per Kit | Total Qty | Qty Issued | Date Issued | Status |
|---------------------------------|------------------------|---------------|-------------|---------------------|------------------|-----------------|--------------------|----------------|-------------|--------------|---------------|----------------|--------|
|---------------------------------|------------------------|---------------|-------------|---------------------|------------------|-----------------|--------------------|----------------|-------------|--------------|---------------|----------------|--------|

| | | | | | | | | | | | | | |
|-------------------------|--|-----------|----|--|--|-----|---|--------|--------|----------|--|--|--|
| M4130NB0.500X03.00 0 | | Purchased | No | | | 100 | f | 4.3800 | 1.1541 | 48.59368 | | | |
|-------------------------|--|-----------|----|--|--|-----|---|--------|--------|----------|--|--|--|

M4130NB0 500X03 000

4130 Bar 0.500 x 3.00

14-03-13

Location

Loc Qty

Loc Code

MAT033

4.38

m127068

4.38

m128354

48 ft.

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

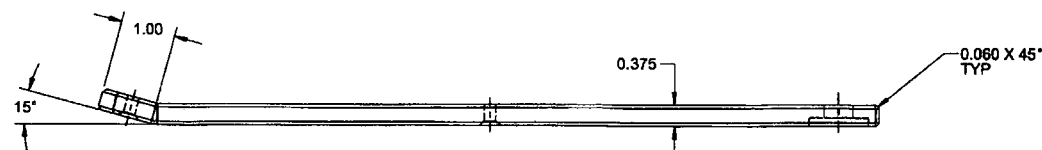
Work Order update only ☐

| | | | | | | | | | | | | | | | | | | |
|--|--|--|--------------------------------------|------------------------------------|------------------------------------|--------------------------------------|------------------------------------|------------------------------------|--|----------------------------------|--|------------------------------------|--|--------------------------------|------------------------------------|------------------------------------|-----------------------------------|--|
| Work Order: _____ Part No. _____ NCR No. _____ | DISPOSITION Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Suspected Unapproved <input type="checkbox"/> | AGAINST DEPARTMENT/PROCESS <table style="width:100%;"> <tr> <td>Skid-tube <input type="checkbox"/></td> <td>Crosstube <input type="checkbox"/></td> <td>Water Jet <input type="checkbox"/></td> <td>Engineering <input type="checkbox"/></td> </tr> <tr> <td>Machining <input type="checkbox"/></td> <td>Small Fab <input type="checkbox"/></td> <td>Prod. Eng. Coord. <input type="checkbox"/></td> <td>Quality <input type="checkbox"/></td> </tr> <tr> <td>Thermoforming <input type="checkbox"/></td> <td>Finishing <input type="checkbox"/></td> <td>Rec/Store/Packaging <input type="checkbox"/></td> <td>Other <input type="checkbox"/></td> </tr> <tr> <td>Large Fab <input type="checkbox"/></td> <td>Composite <input type="checkbox"/></td> <td>Supplier <input type="checkbox"/></td> <td></td> </tr> </table> | Skid-tube <input type="checkbox"/> | Crosstube <input type="checkbox"/> | Water Jet <input type="checkbox"/> | Engineering <input type="checkbox"/> | Machining <input type="checkbox"/> | Small Fab <input type="checkbox"/> | Prod. Eng. Coord. <input type="checkbox"/> | Quality <input type="checkbox"/> | Thermoforming <input type="checkbox"/> | Finishing <input type="checkbox"/> | Rec/Store/Packaging <input type="checkbox"/> | Other <input type="checkbox"/> | Large Fab <input type="checkbox"/> | Composite <input type="checkbox"/> | Supplier <input type="checkbox"/> | |
| Skid-tube <input type="checkbox"/> | Crosstube <input type="checkbox"/> | Water Jet <input type="checkbox"/> | Engineering <input type="checkbox"/> | | | | | | | | | | | | | | | |
| Machining <input type="checkbox"/> | Small Fab <input type="checkbox"/> | Prod. Eng. Coord. <input type="checkbox"/> | Quality <input type="checkbox"/> | | | | | | | | | | | | | | | |
| Thermoforming <input type="checkbox"/> | Finishing <input type="checkbox"/> | Rec/Store/Packaging <input type="checkbox"/> | Other <input type="checkbox"/> | | | | | | | | | | | | | | | |
| Large Fab <input type="checkbox"/> | Composite <input type="checkbox"/> | Supplier <input type="checkbox"/> | | | | | | | | | | | | | | | | |

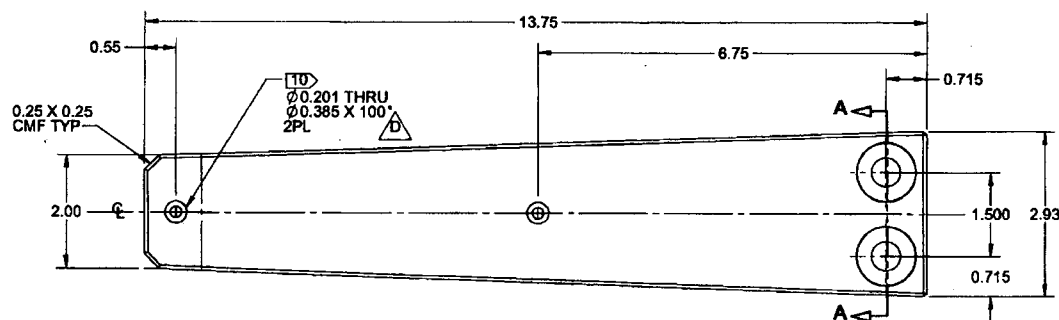
| Root Cause | Date | Step | Qty | Description of work order update or non-conformance | Initial Chief Eng | Action Description | Sign & Date | Verification | QC Inspector |
|---------------|------|------|-----|---|-------------------|--------------------|-------------|--------------|--------------|
| Design | | | | | | | | | |
| Doc/Data | | | | | | | | | |
| Equip/Tooling | | | | | | | | | |
| Handling/Pre | | | | | | | | | |
| Material | | | | | | | | | |
| Operator | | | | | | | | | |
| Offset/Setup | | | | | | | | | |
| Process | | | | | | | | | |
| Supplier | | | | | | | | | |
| Training | | | | | | | | | |
| Transport | | | | | | | | | |
| Unapproved | | | | | | | | | |

FAULT CATEGORY

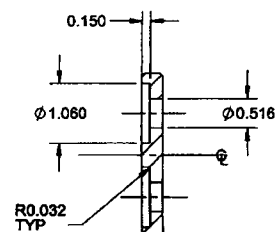
| | | | |
|--|--|---|--|
| Landing Gear <input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric <input type="checkbox"/> Cracks <input type="checkbox"/> Crimp/Kink/Ripple/Wave <input type="checkbox"/> Cuffs <input type="checkbox"/> Crushing <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Marks/Chatter <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube | General <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damage/Defect <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drawing <input type="checkbox"/> Drill Holes <input type="checkbox"/> Finish <input type="checkbox"/> Fit/Function | <input type="checkbox"/> Folio/Program <input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete/Unqualified <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Misaligned/off center <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Off-set <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence | <input type="checkbox"/> Outside Dimensions <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge <input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Set-up <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled <input type="checkbox"/> Other |
|--|--|---|--|



D2741 BLADE



D2741F FLAT PATTERN



SECTION A-A

RELEASED
2013-08-13

NOTES:

- 1) MATERIAL: AISI 4130N STEEL BAR PER MIL-S-6758 OR AMS 6345/6348/6370/6528
REF DART SPEC. M4130N-80.500X3.000
- 2) FINISH: POWDER COAT "WHITE" (4.3.5.2) PER DART QSI 005 4.3
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.030 TO 0.060 MAX
- 6) IDENTIFICATION: WITH DART P/N "D2741" AND B/N "BXXXXX" PER DART QSI 044 6.1 (FINE POINT PAINT MARKER)
- 7) WEIGHT: 3.3 lbs
- 8) SYMMETRY: ABOUT C
- 9) HEAT TREAT TO MIN. ULTIMATE TENSILE STRENGTH = 152 ksi AND MIN. YIELD TENSILE STRENGTH = 141 ksi
PER MIL-S-6758 OR AMS2759/1E AFTER MACHINING.
ACCEPTABLE TO VERIFY TENSILE STRENGTH BY HARDNESS TEST PER ASTM E18 TO 34-40 HRC.
- 10) OPTIONAL: ONLY REQUIRED WHEN MAKING D350-638-215/-216/-217/-218

| D | ADD Ø0.201 HOLES AND NOTE 10 (ZN 07-1). REMOVE -041/-043 OPTIONS REFORMAT DWG. REF PAR11-72 | SFM | 13.02.21 |
|------------|---|---|--------------|
| C | LARGER HOLE, ADD RADIUS AND CHAMFER ADD -041/-043 OPTIONS | PH | 06.01.12 |
| B | CHANGE C'SINK TO C'BORE | CP | 98.09.01 |
| A | NEW ISSUE | DS | 98.04.16 |
| REV. | DESCRIPTION | BY | DATE |
| DESIGN | DS | DART AEROSPACE USA, INC. KENT, WA | |
| DRAWN | SFM | | |
| CHECKED | | DRAWING NO. | REV. D |
| MFG. APPR. | | D2741 | SHEET 1 OF 1 |
| APPROVED | | TITLE | SCALE |
| DE APPR. | | BLADE | NTS |
| DATE | 13.02.21 | COPYRIGHT © 1988 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSES OR DISCLOSED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC. | |



Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID PO23432

Purchase Order Date 3/20/2014

PO Print Date 3/21/2014

Page Number 1 of 2

Order From :

VC-MET004

Ship To : DART AEROSPACE LTD

METCOR INC.
560 BOUL. ARTHUR SAUVE
SAINT-EUSTACHE, QC J7R 5A8
CA

1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA

REVISED

Contact Name

Vendor Phone 450 473 1884

Ship To Contact

Ship To Phone

Ship Via: VENDOR'S TRUCK

Ship Acct:

Buyer

Customer POID

Customer Tax #

Terms

Currency

FOB

Chantal Lavoie

10127-2607

Net 30

CAD

FCA - (Free Carrier)

| Line Nbr | Reference Vendor Part Number Line Comments Delivery Comments | Description/ Mfg ID | Req Date/ Taxable Promise Date | CD | Req Qty/ Unit of Measure | PO Unit Price | Extended Price |
|----------|--|------------------------|--------------------------------------|----|--------------------------------|---------------|----------------|
|----------|--|------------------------|--------------------------------------|----|--------------------------------|---------------|----------------|

| | | | | | | | |
|---|--------|-------------|-------------------------------|--|-------|---------|----------|
| 1 | 113640 | D2741 BLADE | 4/11/2014 Yes 4/11/2014 | | 39.00 | \$12.95 | \$505.00 |
|---|--------|-------------|-------------------------------|--|-------|---------|----------|

HARDEN MATERIAL:
ULTIMATE TENSILE STRENGTH = 152 KSI
MINIMUM YIELD TENSILE STENGHT = 141 KSI
(34-40 HRC)
SAND BLAST PART AFTER HEAT TREAT
NOTE: DETAIL C OF C REQUIRED

49/4/3

Line Total: \$505.00

| | | | | | | | |
|---|--------|----------------|-------------------------------|--|------|---------|----------|
| 2 | 113622 | 646.3013 BLADE | 4/11/2014 Yes 4/11/2014 | | 8.00 | \$39.88 | \$319.00 |
|---|--------|----------------|-------------------------------|--|------|---------|----------|

FINISH: HEAT TREAT TO 58-62 RC
ROCKWELL HARDNESS

PART ARE MADE FROM AISI A2 TOOL STEEL

NOTE: DETAIL C OF C REQUIRED

SP14-3-26

Note:

3/21/2014

METCOR INC.

560 BOUL. ARTHUR-SAUVÉ
ST-EUSTACHE, QC J7R 5A8
Tel: 450-473-1884 / Fax: 450-491-5498

Reçu de livraison

Delivery Receipt

| BON DE TRAVAIL Order | EXPÉDITEUR Shipper ID | BON D'EXPÉDITION Shipper |
|-------------------------|--------------------------|-----------------------------|
| 194312 | 1 | 80199 |

EXPÉDITION COMPLÈTE / Shipped Complete

CLIENT /Customer 215

DART AEROSPACE
1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
Ph: 613-632-5200
Fax: 613-632-1053

LIVRÉ À / Shipped To

DART AEROSPACE
1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
Ph: 613-632-5200
Fax: 613-632-1053

| COMMANDE DU CLIENT Customer PO | BON DE LIVRAISON DU CLIENT Customer Shipper No. | TYPE DE MATÉRIEL Material Type | DATE DE LA COMMANDE Order Date | TRANSPORTEUR Carrier |
|-----------------------------------|--|-----------------------------------|-----------------------------------|-------------------------|
| 23432 | | 4130 | 2014/3/20 | FEDEX |

| QUANTITÉ Quantity | No. PIÈCE / Part No. | NOM DE LA PIÈCE / Part Name | DESCRIPTION DE LA PIÈCE Part Description | POIDS Weight |
|----------------------|-------------------------|--------------------------------|---|-----------------|
| 39 | D2741 | BLADE | (39) D2741 BLADE | 137, |

113640

1 BOITE DE CARTON

| TYPE DE CONTENEUR Container Type | # DE CONTENEURS # Of Containers | COMMENTAIRES CONTENEUR Container Comments |
|-------------------------------------|------------------------------------|--|
| BOITE DE CARTON | 4 | |

| | |
|-------------------------------|--|
| EMPAQUETAGE Packing | |
|-------------------------------|--|

QUANTITÉ EXPÉDIÉE / Quantity Shipped : 39

POIDS EXPÉDIÉ / Weight Shipped : 137,00

QUANTITÉ RESTANTE / Quantity Remaining : 0

POIDS RESTANT / Weight Remaining : 0,00

QUANTITÉ EXPÉDIÉE / Quantity Shipped : 39

POIDS EXPÉDIÉ / Weight Shipped : 137,00

Signature:

Date:

EXPÉDIÉ LE / Shipped On : 2014/04/01



Metcor Inc.

560 Boulevard Arthur-Sauvé, St-Eustache (Québec) J7R 5A8

Tél: 450-473-1884

560 Boulevard Arthur-Sauvé, ST-EUSTACHE, QC, J7R 5A8

Télécopieur / Fax administration: 450-491-5498

Tél.: 450-473-1884

Télécopieur / Fax administration: 450-491-5498

Télécopieur / Fax production: 450 491-6454

Rapport d'Inspection

Inspection Report

| BON DE TRAVAIL order | CHARGEMENT load |
|-------------------------|--------------------|
| 194312 | 1 |

CLIENT / customer 215

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K8A 1K7

LIVRÉ À / shipped to:

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K8A 1K7

| COMMANDE DU CLIENT customer po | BON DE LIVRAISON DU CLIENT customer shipper no. | MATÉRIEL material | CODE DE TRAITEMENT mat'l heat code | NUMÉRO DE LOT lot number |
|-----------------------------------|--|----------------------|---------------------------------------|-----------------------------|
| 23432 | | 4130 | | |

SPÉCIFICATIONS DU PROCÉDÉ

processing specifications

SEL HARDEN

HARDEN AND TEMPER

SAE AMS 2759/1 REV.E

| EXIGENCE / requirement | SPÉCIFICATIONS / specified | TESTS EXÉCUTÉS / performed | RÉSULTATS DE TESTS / results |
|------------------------|----------------------------|----------------------------|------------------------------|
| HARDNESS | 34 - 40 HRC | 39 | 38.5 - 39.5 HRC |
| TENSILE (KSI) | 152 - 182 KSI | | 174.0 - 180.0 KSI |

| QUANTITÉ quantity | POIDS weight | DESCRIPTION DES PIÈCES parts description |
|----------------------|-----------------|---|
| 39 | 137 | D2741 BLADE (39) D2741 BLADE 113640 1 BOITE DE CARTON |

COMMENTAIRES / comments

11/04/2014

APPROUVÉ par / Approved by:

DATE: 2014-04-01

1294141

1294141

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METCOR INC.

560 BOUL. ARTHUR-SAUVÉ, ST-EUSTACHE, QC, J7R 5A8

Tél.: 450-473-1884

Télécopieur / Fax administration: 450-491-5498

Télécopieur / Fax production: 450 491-6454

Certificat de Conformité Détaillé

Detailed Certificate of Compliance

| BON DE TRAVAIL order | CHARGEMENT load |
|-------------------------|--------------------|
| 194312 | 1 |

CLIENT / customer 215

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

LIVRÉ À / shipped to:

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

1

| COMMANDE DU CLIENT customer po | BON DE LIVRAISON DU CLIENT customer shipper no. | MATÉRIEL material | CODE DE TRAITEMENT mat'l heat code | NUMÉRO DE LOT lot number |
|-----------------------------------|--|----------------------|---------------------------------------|-----------------------------|
| 23432 | | 4130 | | |

SPÉCIFICATIONS DU PROCÉDÉ processing specifications

SEL HARDEN

HARDEN AND TEMPER

SAE AMS 2759/1 REV.E

| EXIGENCE / requirement | SPÉCIFICATIONS / specified | TESTS EXÉCUTÉS / performed | RÉSULTATS DE TESTS / results |
|---|----------------------------|----------------------------|------------------------------|
| HARDNESS | 34 - 40 HRC | 39 | 38.5 - 39.5 HRC |
| TENSILE (KSI) | 152 - 182 KSI | | 174.0 - 180.0 KSI |
| Tensile values converted from Hardness. | | | |

| QUANTITÉ quantity | POIDS weight | DESCRIPTION DES PIÈCES parts description |
|----------------------|-----------------|---|
| 39 | 137 | D2741 BLADE (39) D2741 BLADE 113640 1 BOITE DE CARTON |

| Operation | Temp. spécifiée Specified Temp | Temps de trempage Spécifié Specified Soak Temp | Atmosphère | Carbone Carbon Potential | Q-Media Q-Temp | Four # Furnace # | Date Départ Start Date | Heure d'entrée Time In | Heure de sortie Time Out | Date Complétée Date complete |
|---------------------|-----------------------------------|---|------------------|--------------------------------|-------------------|---------------------|---------------------------|---------------------------|-----------------------------|---------------------------------|
| 1.00 CONT. INIT. | LAVAGE | | si nécessaire | | | | | | | |
| 2.00 PREPARING | COMPTAGE | | | | | | | | | |
| 3.00 PREHEAT 1 | 1000 +/-25F | 1:00 1:30 | air | | | 134 | | | | |
| 4.00 SEL HARDE | 1575 +/-25°F | 0:40 | sel | | Brine | 106 | | | | |
| 5.00 WASH | 150 | 0:30 | soap | | | | | | | |
| 6.00 SNAP TEMP | 400 +/-10°F | 2:00 | air | | | 639 | | | | |

METCOR INC.

560 BOUL. ARTHUR-SAUVÉ, ST-EUSTACHE, QC, J7R 5A8

Tél.: 450-473-1884

Télécopieur / Fax administration: 450-491-5498

Télécopieur / Fax production: 450 491-6454

Certificat de Conformité Détaillé

Detailed Certificate of Compliance

| BON DE TRAVAIL order | CHARGEMENT load |
|-------------------------|--------------------|
| 194312 | 1 |

CLIENT / customer 215

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

LIVRÉ À / shipped to:

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

1

| Operation | Temp. spécifiée Specified Temp | Temps de trempe Spécifié Specified Soak Temp | Atmosphere | Carbone Carbon Potential | Q-Media Q-Temp | Four # Furnace # | Date Départ Start Date | Heure d'entrée Time In | Heure de sortie Time Out | Date Complétée Date complete |
|---------------------|-----------------------------------|---|------------|--------------------------------|-------------------|---------------------|---------------------------|---------------------------|-----------------------------|---------------------------------|
| 7.00 SANDBLAS | | | Sablage | | | | | | | |
| 8.00 DIST INSP | | | | | | | | | | |
| 9.00 TEMPER | 875 +/-10°F | 4 hrs | air | | | 635 | | | | |
| 10.00 HARDN INS | | | | | | | | | | |
| 11.00 SANDBLAS | | | Sablage | | | | | | | |
| 12.00 HUILAGE | | | huile | bassin 525 | | | | | | |
| 13.00 FINAL INSP | | | | | | | 04-01-2014 | | | 04-01-2014 |

COMMENTAIRES / comments

Le traitement thermique (TT) a été fait en utilisant des équipements en conformité avec AMS2759.

Le TT a été fait tel que requis par AMS2759 et toutes les vérifications et les tests demandés ont été faites et documentés. Aucun changement n'a été faite par rapport au TT. On certifie que le matériel a été fabriqué, échantillonné, testé et inspecté en accord avec AMS2759 et le bon de commande et le matériel rencontre les exigences spécifiées.

Heat treatment (HT) was performed with equipment that meets the requirements of AMS2759.

All HT operations were in compliance with AMS2759 and all verifications have been performed and documented. No unauthorized changes were performed in regards to the HT. We certify that the material was manufactured, sampled, tested and inspected in accordance with AMS2759 and the purchase order and was found to meet the requirements.

APPROUVÉ par / Approved by:

Isabel Otero
QA Technician

DATE: 2014-04-02

/ Nous certifions que toute l'information comprise sur ce rapport est exacte et conforme aux requis du client./We certify that all the information on this report is exact and in accordance with the order requirements.